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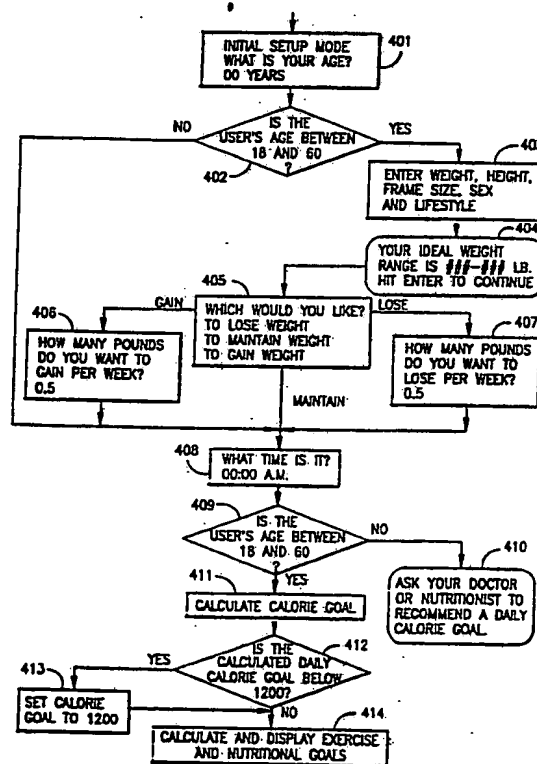
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## (57) Abstract

A personal health monitoring device (1) for determining and aggregating the nutritional content of foods consumed during a day. A database (107) containing a list of foods (301) separated into different categories and the nutritional content (312) is used for locating the appropriate values. Additionally, daily nutrition goals are automatically set in relation to personal information (403), such as height, weight, frame size and sex, of the user. The actual consumption is compared to the goals on a daily, weekly and monthly average to monitor progress. Exercise goals and actual totals (414) are included in the stored information (107).



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PERSONAL HEALTH MONITORING DEVICEFIELD OF THE INVENTION

The invention relates to a portable, electronic personal health monitoring device which sets appropriate dietetic, nutritional and exercise goals and monitors actual nutrition and exercise in relation to those goals.

BACKGROUND OF THE INVENTION

It is common for people, especially those with health or weight problems, to be highly concerned with the nutritional content of the foods they consume. Those seeking to lose weight are normally seeking to reduce the caloric content of their diet, but others under medically prescribed diets or otherwise on special diets need information on other nutritional elements, such as the sodium or the cholesterol contents of foods they consume. To gain the information on the nutritional content of their diet, the person must customarily consult a book or books with charts and tables which list foods and values of various nutritional attributes of those foods. The user must then separately record the nutritional content of those foods, determine the corresponding number of portions for each food, multiply the portions by the nutritional values, and then add all of the nutritional values for the foods during a given meal or day. Therefore, to arrive at a nutritionally balanced diet, the user needs books, a calculator, paper, and pencil or pen. The compiled

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information must then be carried around and consulted daily. The sheer amount of reference information and the resulting piles of paper are especially inconvenient for people who travel or eat at restaurants.

A number of electronic devices have been developed which simplify some of the calculating and recording functions and obviously reduce the resulting paperwork for users. Generally, these devices provide simplified means for entering an identifier of the type of food and for determining the content of various nutritional attributes of the identified foods. Some of the devices also have calculating and memory capability for multiplying the nutritional values by portion size and for accumulating values in memory for providing totals for a given period. Such devices are shown in U.S. Patent Numbers 4,321,674 to Krames et al., 4,575,804 to Radcliff, 4,796,182 to Duboff, and 4,891,756 to Williams.

U.S. Patent Number 4,321,674 to Krames et al. discloses a device for accumulating and displaying nutritional values. The user presses keys representing portions of the dietetic exchanges. The device then accumulates and displays the total carbohydrates, protein, fat and calories corresponding to a typical portion of each exchange. U.S. Patent Number 4,575,804 to Ratcliff describes a calculator which includes groupings of foods with similar nutritional content corresponding to each key. The user presses the appropriate key for each of the foods consumed and the device accumulates the associated nutritional values. U.S. Patent Number 4,796,182 to Duboff

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discloses a device based upon the daily dietetic exchanges. The device displays maximum and minimum daily and/or weekly portions in each category. When a key is pressed, the number of portions for that category is reduced by one so the portions remaining to be eaten are displayed. Finally, U.S. Patent Number 4,891,756 to Williams describes a microcomputer for selecting foods from a database and accumulating the total of nutritional elements for all selected foods in a day.

In sum, the systems disclosed in the above patents provide methods for determining and accumulating the nutritional content of foods consumed during a day without resort to books, calculators and recording mechanisms. However, these devices do not provide or determine appropriate levels of the nutritional attributes. Consequently, the user still has to compare the totals derived by the device with an externally determined goal. Furthermore, in making those comparisons, the devices do not provide any assistance in determining how to adjust the diet to achieve the calculated nutritional goals. The devices also do not provide a capability for monitoring trends in dietary habits. Instead, totals are listed for a single day and do not incorporate trade-offs in the nutritional value of foods consumed over successive days. Additionally, the devices are not useful for planning appropriate menus to meet dietary goals. The devices can only accumulate values for entered items and do not allow the user to remove or change food items in order to more closely plan and modify a dietary program.

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Finally, exercise is an important component and factor in any health maintenance program. Known electronic devices do not have the capability to monitor exercise and/or to determine the impact of exercise on the overall nutritional plan.

#### SUMMARY OF THE INVENTION

In view of the foregoing, it should be apparent that there still exists a need for a device that monitors all aspects of a health maintenance program, that assists the user in setting appropriate health and nutritional goals, that plans future meals and exercises to meet those goals, and that monitors long-term progress in relation to those set goals. A need also exists for a portable device that provides useful suggestions for changing diet to meet those set goals. It is, therefore, a primary object of this invention to provide a portable electronic device which assists the user in monitoring nutrition and exercise to meet health goals set by the user.

It is another object of the invention to assist the user in determining appropriate nutritional and exercise goals based upon the user's age, sex, physical characteristics, and lifestyle. The user can also modify the set goals in order to meet overall health, dietary or weight maintenance objectives.

It is another object of the invention to provide the values of nutritional attributes for foods consumed and



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of the user. The device includes means for reviewing and modifying the selected foods and exercises for any day in order to allow planning to meet the goals. Monitoring means are also provided for reviewing daily, weekly, and monthly success in meeting goals and to provide recommendations for adjustments to improve nutrition.

With these and other objects, advantages and features of the invention that may become apparent, the nature of the invention may be more clearly understood by reference to the following detailed description of the invention, the appended claims and to the several drawings attached herein.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of an apparatus according to the preferred embodiment of the present invention;

FIG. 2 is a block diagram of the circuitry of the device of FIG. 1;

FIGS. 3-8 are block flow diagrams illustrating the operational sequence of the apparatus shown in FIGS. 1-2.

#### DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now in detail to the drawings wherein like parts are designated by like reference numerals throughout, there is illustrated in FIG. 1 a front view of the personal, portable health monitoring apparatus 1

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according to a preferred embodiment of the present invention. The apparatus 1 includes a display 2 which preferably comprises a super-twist liquid crystal diode (LCD) display which accommodates, for example, four lines by twenty-one characters of text. However, any size LCD or Light Emitting Diode (LED) display can be employed.

The apparatus 1 is operated by keys 3-12 the operations of which are summarized as follows: the ON/OFF key 3 turns the unit on and off without affecting information and memory; the ENTER key 8 is used to accept the user's entered choice and the CLEAR key 6 operates to return the user to the choices displayed before the most recent ENTER key 12 was pressed; the HELP key 7 provides operating instructions on the display 2 at any point; subsequent operation of the HELP key 7 exits the instruction display and resumes normal operation. The operation of the remaining keys will become more apparent in conjunction with the discussion below regarding the operating procedure of the present invention. Additionally, a hinged cover (not shown) can be used to prevent accidental operation.

A block diagram of the hardware of the preferred embodiment is illustrated in FIG. 2. The apparatus is operated by an eight bit microcontroller 101, including a real time clock, a memory 107 which can include a ROM a RAM and a driver for the display. The microcontroller 101 controls the display 2 and is also connected to the memory 107 by a bus adapted to provide addresses, data and control signals.

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The software for operating the apparatus is contained in the memory 107. Software may also be located in a ROM memory that can be separated from the RAM requiring decoding of information from both memories.

Operation of the hardware shown in FIG. 2 is controlled by the microcontroller 101. The microcontroller 101 also outputs choices, information and instructions on the display 2.

The memory 107 contains tables and database information for operation of the apparatus. It includes display and help screens. There are two main databases located in the external ROM 107: a food database and an exercise database. The food database contains listings for 1500 foods and the values of nutritional attributes for each food. The food database is organized into groups of related foods, such as beverages, breads, dairy products, etc. These groups are used to simplify locating and storing foods in memory. As discussed below in relation to FIG. 4a, the user first chooses the category and then the actual food within that category. The food database includes nutritional information for two different monitoring methods. First, the content by weight of nutritional attributes are stored for each food. These nutritional attributes include the average portion size, calories, protein, carbohydrates, total fats, saturated fats, fiber, cholesterol, and sodium. Also, foods which are high in sodium, fat and cholesterol are flagged. Second, the American Dietetic Association uses an exchange method for determining the nutritional content of foods

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which determines standards for servings in the important food groups: fruits, vegetables, fat, bread, lean meat, skim milk, cups of water and empty calories. The database includes this information for each food as well. Therefore, the user can follow either method for determining nutritional content, or use both methods in combination.

The exercise database includes a listing of 53 exercises and the calorie equivalent, i.e. how many calories the exercise uses per minute.

Referring back to FIG. 2 the external RAM 108 stores user defined foods. The user can add information on additional foods by entering nutritional information, or modifying stored information for an existing food. As a result, the device allows the user to expand the food database for less common foods.

An internal RAM (not shown) of the microcontroller 101 is used to store personal information on the user, the daily food and exercise lists, and daily totals of the nutritional attributes for the past 30 days. The food lists are separated by meals, (i.e. breakfast, lunch, dinner, snacks, and planned future meals). These lists contain the location and quantity data for each selected food. Specifically, the information includes a food group number, a food item number, the food units and the portion size. When the nutritional information is to be displayed, the appropriate food is located in the memory 107 by using the group and item numbers. Similarly, the exercise list

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contains an exercise number and a duration. At midnight of each day, as determined by the internal clock, the daily meal lists are cleared and the past days' information is updated with the completed day's totals.

FIG. 3 is a block flow diagram which illustrates the procedures for operating the apparatus 1. Operations begin by first turning the device ON through key switch 3. Upon pressing the MODE key 4, the display 2 then lists the possible operating modes 202 of operation. One of the modes appears highlighted in reverse video 203. The up and down arrow keys 9, 10 are used for selection of the appropriate operating mode. Since the display 2 only includes four lines of text, the up and down arrow keys 9, 10 also scroll the display so that any of the modes may be chosen.

When the appropriate operating mode is highlighted, the ENTER key 8 is pressed to enter the selected mode, as shown in step 204. The display 2 then lists the next set of function choices which are selected, as described above, in step 205.

As shown in FIG. 3, function choices provide different types of operations and displays. For example, the VIEW THE TIME function 206, only displays information. To exit from that screen, the user can either press the CLEAR key 6 to leave that choice at step 214, or press the MODE key 4 to restart the system at step 201. Some choices, such as SET THE ALARM 207, allow the user to change numbers or information. The number which can be

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changed 215 appears highlighted in reverse video. The left and right arrow keys 11, 12 are used to select which number to change and the up and down arrow keys 9, 10 are used to change the number. When finished, the user exits this screen in the same manner as an information display. The choice of a function also leads to other possible choices. The CONVERT UNITS function, for example, requires that the user choose a type of unit 208 from a list of units, as well as the "from" units 209, and the "to" units 210. Screen 211 allows the numbers to be changed in the same manner as screen 207, by using the left and right arrow keys 11 and 12 to choose the number requiring change and the up and down arrow keys 9 and 10 to actually change the number. In converting the units, the "to" units 213 are automatically changed with the "from" units.

FIGS. 4a, 4b and 4c are flow diagrams that illustrate how the memory is accessed according to the preferred embodiment of the present invention. FIG. 4a is a block flow diagram of the procedure for selecting a food from the food memory.

First, the display lists the food categories 301 stored in the memory. The user then selects the appropriate category by using the up and down arrow keys 9, 10 and the ENTER key 8 according to the procedure described above. This choice provides the group number which is stored in the microcontrollers RAM. The user then selects the first letter of the food from a list of letters 302 according to the same procedure and the actual food item from the list of foods 303. This provides the item number

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to be stored. If the default units for the selected foods are not "each" or "slice", the user then selects the units to use at step 305. Finally, the user enters the portion size at step 306 by changing the individual numbers 307 with the arrow keys as described above.

FIG. 4b illustrates a block flow diagram of the procedure for selecting an exercise from memory. This procedure consists of selecting the first letter of the exercise 308 and then the exercise from a list 309. The user must then enter the duration of the exercise 310 by changing the number of minutes 311 using the arrow keys, as described above.

FIG. 4c represents how the nutritional information is displayed according to the preferred embodiment of the present invention. The first screen 312 lists the food to which the nutritional information relates and the number of calories. When the NUTRIENT key 5 is pressed at step 316, the next screen 313 is displayed. Subsequent operation of the NUTRIENT key 5 cycles through the nutrient screens.

FIG. 5 is a block flow diagram which illustrates the operation of the initial set up mode. This procedure is used to set the calorie and exercise goals for the individual user. It must be performed before any other modes of operation will operate.

The user first enters his or her age at step 401. If the user's age is between 18 and 60, the user then enters weight, height, frame size (small, medium, large),

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sex and lifestyle at step 403. Lifestyle is a scale of physical activity from 1 (sedentary) to 5 (serious athlete). The apparatus then displays the ideal weight range at step 404. The weight range is determined from a table stored in the external ROM 107 based upon the 1983 Metropolitan Height and Weight Tables. These tables provide a weight range in relation to the height, sex, and frame size of the person. The user must then decide whether to maintain his/her weight at step 405 or how many pounds to gain at step 406, or to lose at step 407, per week. The user enters the current time at step 408. The time is used to determine the end of each day. This information is used to monitor daily, weekly and monthly progress.

Based on the entered information, the apparatus calculates a calorie goal for the user at step 411. The calorie goal is determined by multiplying the Resting Energy Expenditure (REE) by an activity factor and adding a daily calorie adjustment. The REE, activity factor and daily calorie adjustment are determined according to the following tables which are also stored in memory.

TABLE 1 (REE)

<u>Age</u>	<u>Males</u>	<u>Females</u>
18-30	(15.3 x wt) + 679	(14.7 x wt) + 496
30-60	(11.6 x wt) + 879	(8.7 x wt) + 829

wt = Weight in kilograms at midpoint of ideal range.



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TABLE 2

Level of activity:	very low		moderate	exceptionally high	
Activity factor (men):	1.3	1.6	1.7	2.1	2.4
Activity factor (women):	1.3	1.5	1.6	1.9	2.2

TABLE 3

Desired weekly weight (loss) or gain:	(2)	(1)	0	1	2
Daily Calorie Adjustment:	-1000	-500	0	500	1000

Since the daily calorie intake should never be less than 1200 calories, the present invention will set the calorie goal to 1200 at step 413 if the calculated value is less. The apparatus then calculates and displays the exercise and nutritional goals for the user. The nutritional goals are based upon the calorie goal and are calculated according to the equations in Table 4 below. The exercise goal is based upon the lifestyle or activity level of the user. The preferred embodiment of the present invention has five different levels of cardiovascular exercise. The exercise levels are described in Table 5 below.

TABLE 4

<u>Nutritional Component consumption</u>	<u>Formula for determining daily</u>
Protein (grams)	calories x .2 / 4
Carbohydrates (grams)	calories x .55 / 4
Total fat (grams)	calories x .25 / 9
Saturated fat (grams)	total fat / 3
Fiber (grams)	25

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Cholesterol (mg)	300
Sodium (mg)	2200
Water (cups)	8 + one additional cup for every 25 pounds of excess weight.

## American Dietetic Association Exchanges

fruit	5.315 x calories / 1600
vegetable	3.31 x calories / 1600
fat	3.91 x calories / 1600
lean meat	5.42 x calories / 1600
bread	6.72 x calories / 1600
skim milk	1.91 x calories / 1600

TABLE 5

<u>Exercise Level</u>	<u>Recommended Exercises</u>	<u>Duration (minutes)</u>	<u>Frequency (x per week)</u>	<u>total minutes per week</u>
A	walking - 2-3 mph bicycling - 10 mph exercycle - light swimming - 25 yd/min	15	3	45
B	walking - 2-3 mph bicycling - 10 mph exercycle - light swimming - 25 yd/min	20	3	60
C	walking - 3-4 mph bicycling - 12 mph exercycle - light/med swimming - 35 yd/min	25	3-4	75 - 100

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D	walking - 4 mph	30	4-5	120 -150
	jogging - 5-6 mph			
	bicycling - 14 mph			
	exercycle - medium/hard			
	swimming - 50 yd/min			
	aerobics - medium			

E	jogging - 5-6 mph	35	4-5	140 -175
	running - 7-8 mph			
	bicycling - 14 mph			
	exercycle - medium/hard			
	swimming - 50 yd/min			
	aerobics - hard			

Level of Physical  
Activity in Lifestyle

Initial Exercise  
Level

1

A

2

A

3

B

4

B

5

C

The apparatus does not provide goals for users who are not between the ages of 18 and 60. At step 410, the apparatus suggests that the user contact a doctor or nutritionist to determine the appropriate goals. These goals can then be entered using the modify function shown in FIG. 8.

A block flow diagram of the operation of the meal planning and recording functions of the apparatus is illustrated in FIG. 6. The foods are controlled on

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separate lists for each meal, including breakfast, lunch, dinner and snacks. The user first selects which list to work with from the list display 501. FIG. 6 illustrates the future meal list option 502, but the other lists operate in the same manner without the CLEAR action 510.

As stated above, each list is separately maintained in memory so that it can be reviewed and revised at any time during the day. After choosing a meal list 501, the user must choose an action from the action list 502.

If the user selects to remove an item from the list, the apparatus first checks whether there are any other items in the list and then displays the items so that the user can select which item to remove from the list 504. The item to remove is chosen by using the arrow keys as described above. If there are no items in the list, the apparatus displays a message 506 to that effect.

When the user selects to review items in the list, the apparatus again determines whether there are any items in the lists and displays a message 506 if the list is empty. If there are items in the list, the apparatus displays the name of the first item, the portion size and the number of calories at step 513. The up and down arrow keys 9, 10 are used to display other items in the list. The NUTRIENT key 5 is used to cycle through the other values for nutritional attributes as described with respect to FIG. 4c.

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If the user chooses to review totals, the apparatus displays the totals of the nutritional attributes corresponding to the items in the list for this meal at step 509. The NUTRIENT key 5 is used to cycle through this list as described with respect to FIG. 4c.

To add an item to the list, the procedure described with respect to FIG. 4a is used to retrieve the food item and the nutritional attribute information from memory and to include it in the memory for the particular list.

With respect to the future meal list, there are two other functions: all items in the food list can be erased at step 511, so that a new meal can be planned; and/or the items can be transferred to one of the other meal lists by selecting the appropriate meal from the transfer meal list 512.

The procedures for manipulating the exercise list are similar to the procedures for working with foods. FIG. 7 illustrates a block flow diagram for creating and modifying daily exercise lists. First, the user determines which function (add, remove or review exercises) to perform at step 602. At step 606, the user can select an exercise from a display to remove from the daily list. Also, the user can review the exercises in the list. The apparatus displays one exercise on the list along with the duration and the number of calories used for that exercise. The up and down arrow keys 9, 10 are used to view the displays 607, 609 for each exercise. If there are no items in the daily exercise lists when the user chooses to remove an

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exercise or review the list, the apparatus determines that at steps 603 and 604 respectively and displays a message 605 to that effect. Finally, exercises are added to the list at step 610 by using the procedure to retrieve an exercise from the memory as described with respect to FIG. 4b.

FIG. 8 illustrates a block flow diagram for monitoring nutritional or exercise progress in relation to the goals. First, the user selects whether to view nutritional progress or exercise progress at step 701. When reviewing the exercise progress, the user can select to review or modify a seven day goal 703, or compare actual exercise to the seven day goal 706. To review the goal, preferably a written description of the goal 705 is displayed. This description includes the duration and frequency of exercises and includes a list of appropriate exercises. The exercise goal is modified at step 704 by selecting the appropriate exercise level. As described above in Table 5, the apparatus includes 5 levels for exercise goals. When the user is comfortable with the current level and has been on the level for at least a month, it is recommended that the level be increased.

The apparatus also compares actual performance to the goals at step 706. This display lists the total minutes of exercises for seven days and also the range of minutes for the goal. If the apparatus has been used for less than seven days, the number of days and the minutes are both displayed.

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With respect to nutritional progress, the user can select to review the daily goals, modify the daily goals, review the actual results, or compare the actual totals to the goals at 707. Reviewing the goals, step 709, operates to display all the values for the goals for the nutritional attributes in the manner discussed with respect to FIG. 4c. Similarly to modify the goals 710, the attributes are displayed and the numbers may be adjusted by using the arrow keys 9-12. If the user is not between the ages of 18 and 60, the initial setup mode does not determine nutritional goals. Therefore, the user should use the modification capability to set appropriate goals.

In reviewing the actual totals for the value of nutrients in foods consumed, the procedures from FIG. 4c are used to display the nutritional attributes. Additionally, the up and down arrow keys 9, 10 can be used to cycle through the various stored totals. As shown in block 711 of FIG. 8 the nutritional totals include today's totals, remaining to be eaten today, yesterday's totals, the seven day average, and thirty day average. In comparing actual totals to the goal, the apparatus according to the present invention preferably can provide a narrative comparison with suggested changes in diet as well as a numerical comparison of the percentage of goals. The narrative comparison 713 is based on the average performance over a number of days. If the total for any nutritional attribute differs from the goal by a predetermined percentage, the narrative comparison will include a message about that goal and how to adjust the diet to correct the error. The percentage differences and

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messages are included in tables in memory. The numerical comparison operates in a similar manner to the actual totals. The nutrient values are displayed as a percentage of the goal and can be cycled through using the arrow keys 9, 10 to monitor totals for today, yesterday, the seven day average and the thirty day average.

Preferably, the apparatus according to the present invention can include a number of other functions important to health conscious people. These functions could include a nutritional quiz, a nutritional glossary, and a determination of the duration of an exercise needed to use the number of calories for a selected portion of a selected food.

Although a preferred embodiment is specifically illustrated and described herein, it will be appreciated that modifications and variations of the present invention are covered by the above teachings and within the purview of the appended claims without departing from the spirit and intended scope of the invention.



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WHAT IS CLAIMED IS:

1. An apparatus for monitoring personal health and nutrition, comprising:

food memory means for storing food names and a plurality of nutritional attributes corresponding to each of said stored food names;

display means for displaying a plurality of lines of food names;

entering means for selecting at least one of said food names;

selection means for storing said selected food names and one of said nutritional attributes corresponding to each of said selected food names; and

processing means for determining nutritional totals for said nutritional attributes of said selected food names.

2. The apparatus of claim 1, wherein said processing means accumulates said totals according to meal categories and totals for all categories.

3. The apparatus of claim 1, wherein said entering means further includes means for entering a portion size for said selected food and said processing

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means further includes means for adjusting said nutritional attributes totals according to said portion size.

4. The apparatus of claim 1, further comprising: review means for displaying said selected food names, said nutritional attributes corresponding to said selected food names, and said totals of said nutritional attributes.

5. The apparatus of claim 1, further comprising: revision means for changing said food names and said nutritional attributes in said first memory.

6. The apparatus of claim 1, further comprising:  
calendar means for determining twenty-four hour days;

day memory means for storing said totals for a plurality of days; and

averaging means for determining and storing daily averages of said totals for each of said nutritional attributes for said plurality of days.

7. The apparatus of claim 6, wherein said plurality of days is seven.

8. The apparatus of claim 6, wherein said plurality of days is thirty.

9. The apparatus of claim 6, further comprising:

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day selecting means for choosing one of said plurality of days; and

review means for displaying said totals of said nutritional attributes corresponding to said selected day.

10. An apparatus for monitoring personal health and nutrition, comprising:

first memory means containing food names and a plurality of nutritional attributes corresponding to each of said food names;

display means for simultaneously displaying a plurality of lines of said food names;

entering means for selecting at least one of said food names; and

means for displaying said nutritional attributes corresponding to said selected food name.

11. An apparatus for monitoring personal health and nutrition, comprising:

input means for entering physical and behavioral characteristics;

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conversion means, for receiving said characteristics and for calculating health goals, including food nutrition and exercise levels;

goal memory means for storing said health goals;  
and

display means for displaying said health goals.

12. The apparatus of claim 11, further comprising:

food memory means containing food names and a plurality of nutritional attributes corresponding to each of said food names;

entering means for selecting at least one of said food names;

addition means for accumulating and storing totals for said nutritional attributes corresponding to each of said selected food names;

comparison means for comparing said totals and said health goals for said nutritional attributes; and

suggestion means for displaying dietary changes to meet said nutritional goals.

13. The apparatus of claim 11, further comprising:

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exercise memory means containing a plurality of exercise names and an exercise value corresponding to each of said exercise names;

exercise selection means for selecting at least one of said exercise names;

duration input means for entering a duration time for each of said selected exercises;

accumulation means for calculating a total exercise value for all said selected exercise names and said times of performance; and

comparison means for comparing and displaying said total exercise value and said exercise goal.

14. An apparatus for monitoring food and exercise, comprising:

food memory means containing a plurality of food names and calorie data corresponding to each of said food names;

food selection means for choosing one of said food names from said food memory means;

exercise means containing a plurality of exercise names and calorie use rate data for each of said exercise names;

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exercise selection means for choosing one of said exercise names from said exercise memory means;

processing means for determining a duration time for said selected exercise such that a total calorie use for said selected exercise equals said calorie data for said selected food name; and

display means for displaying said duration time.

15. An apparatus for monitoring personal health and nutrition, comprising:

memory means for storing food names and a plurality of nutritional attributes corresponding to each of said stored food names;

selection means for selecting at least one of said food names; and

processing means for determining nutritional totals for said nutritional attributes of said selected food names.

16. A method for monitoring personal health and nutrition, comprising the steps of:

storing a plurality of food names and a plurality of nutritional attributes corresponding to each of said food names in a storage means;

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selecting food names from said storage means; and

processing said selected food names to determine nutritional totals for said nutritional attributes of said selected food names.

FIG. 1

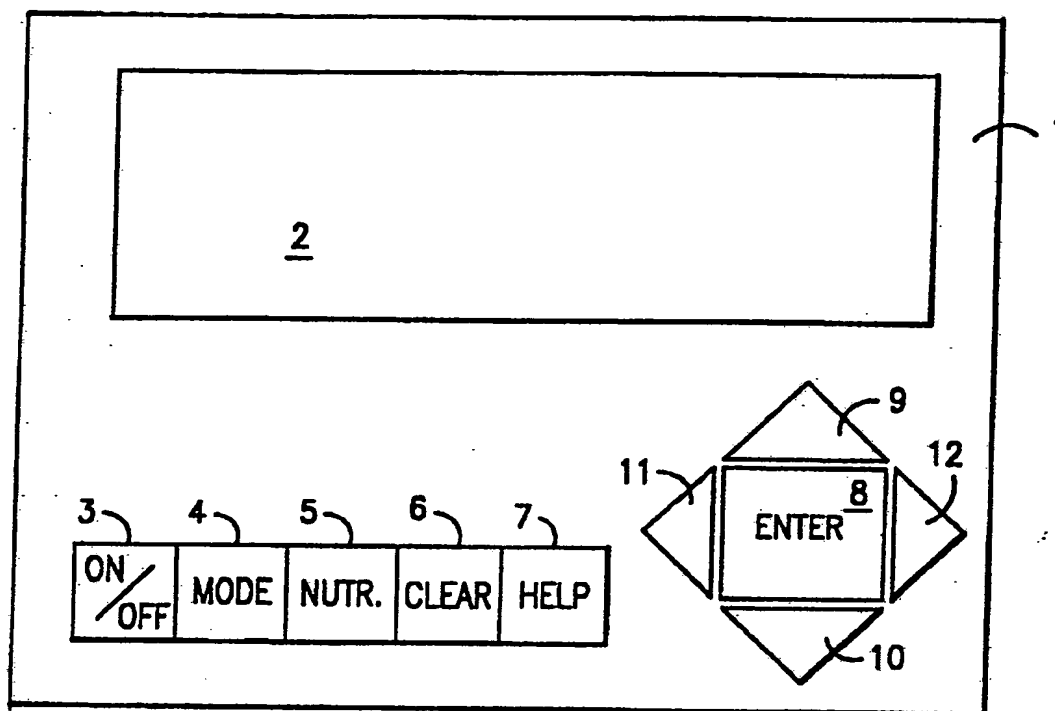
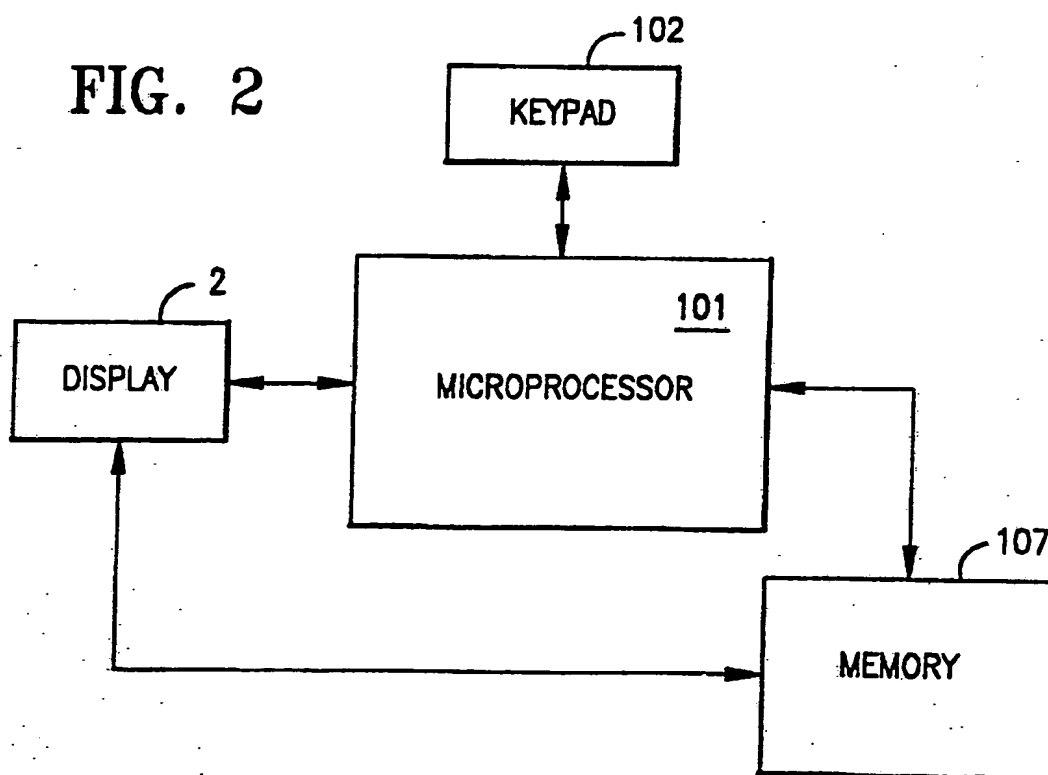


FIG. 2



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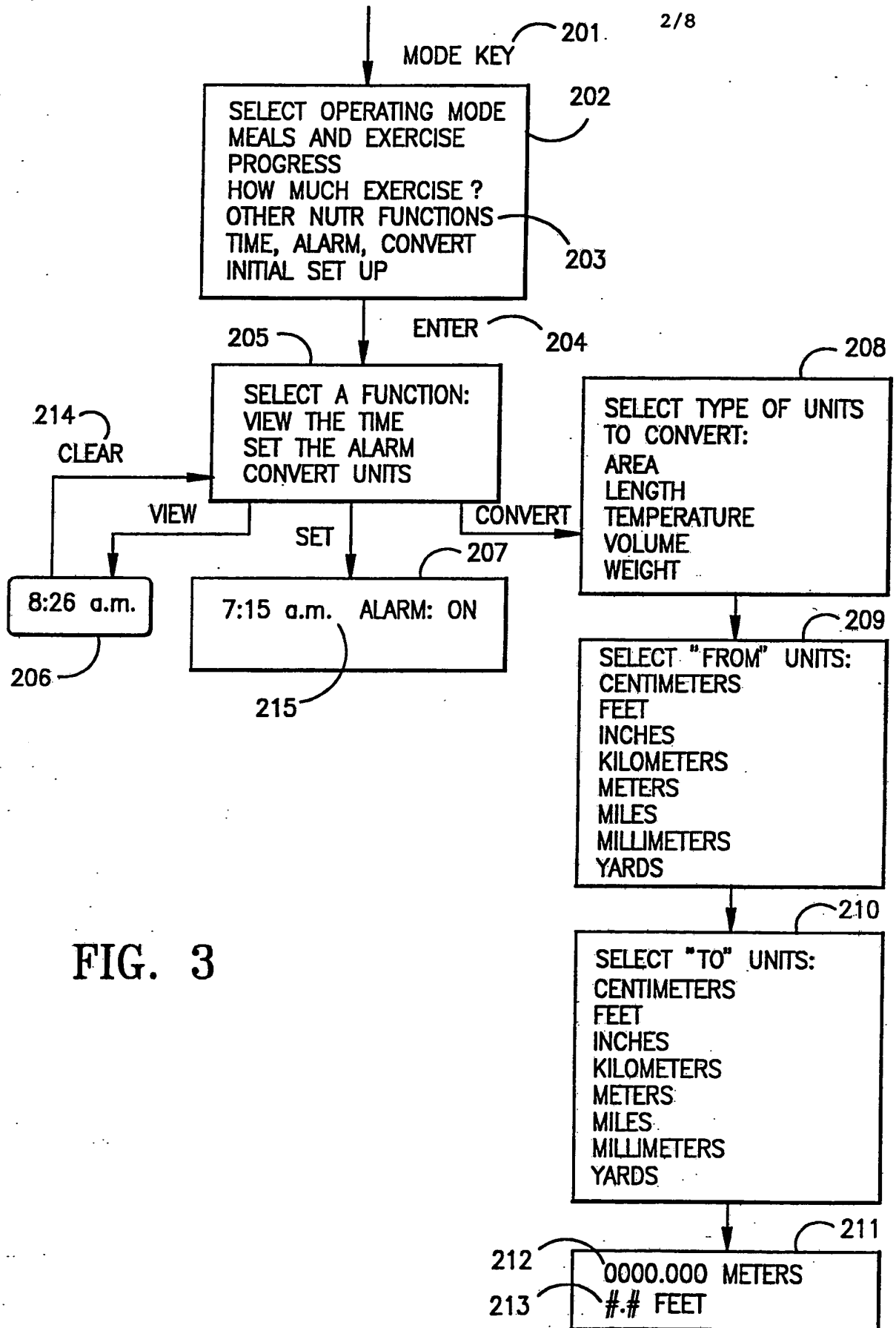


FIG. 3

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FIG. 4A

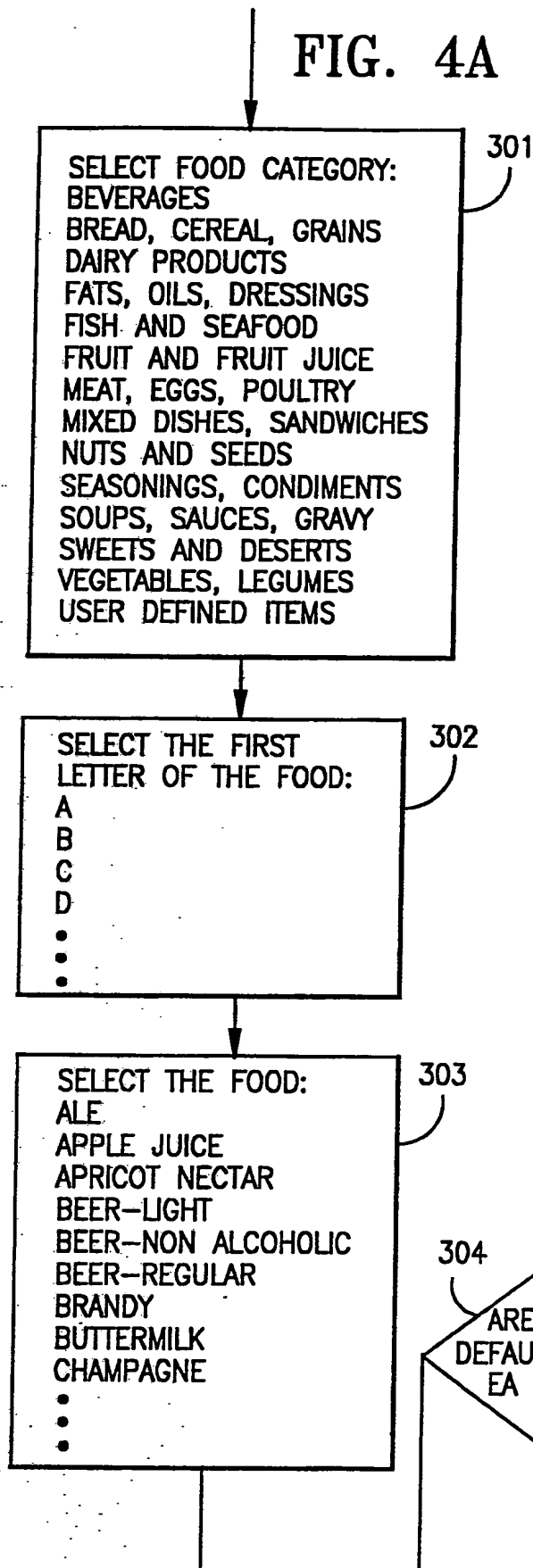


FIG. 4B

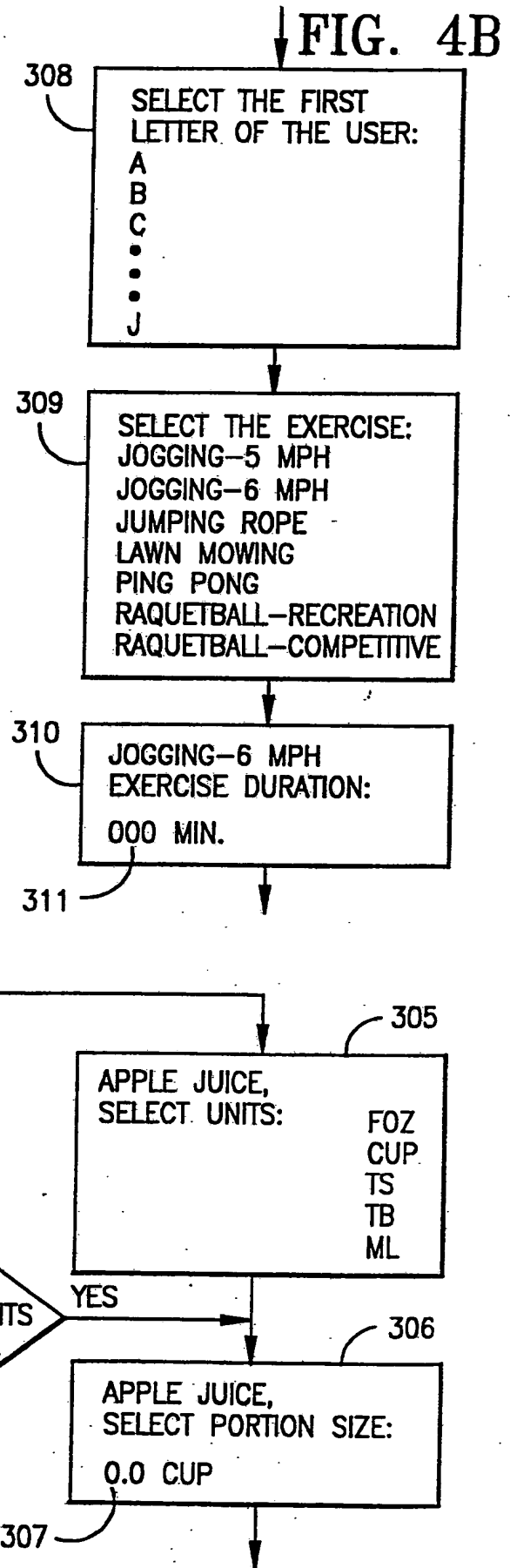


FIG. 4C

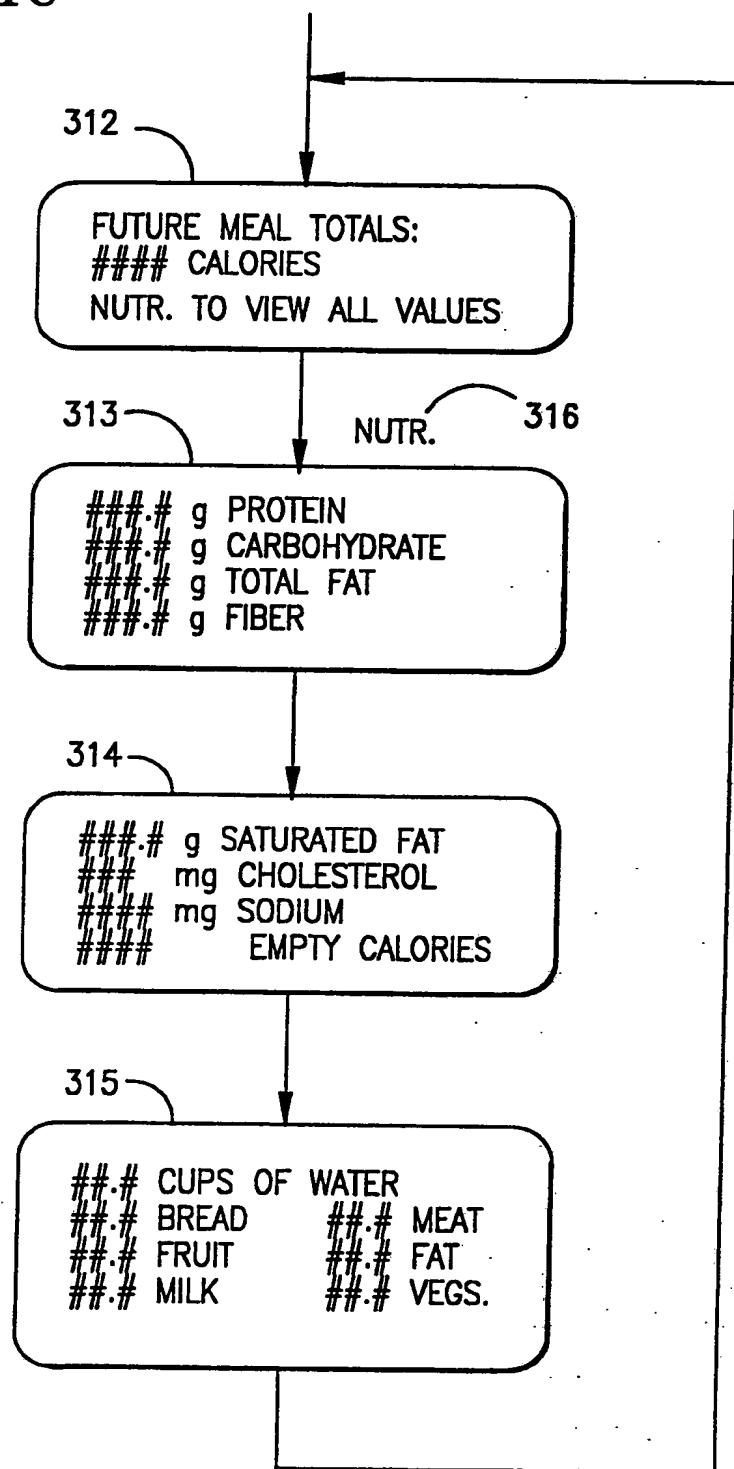
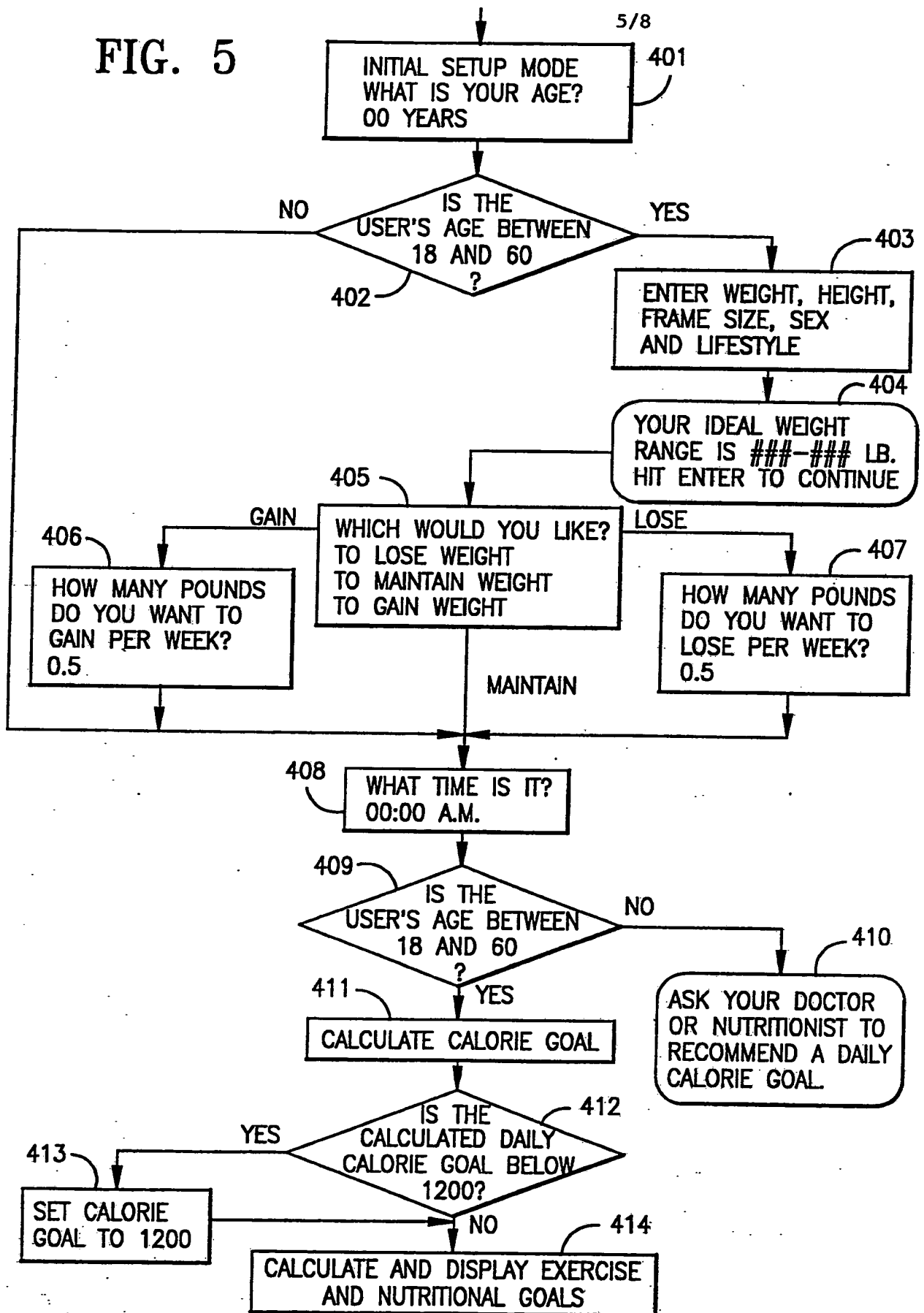
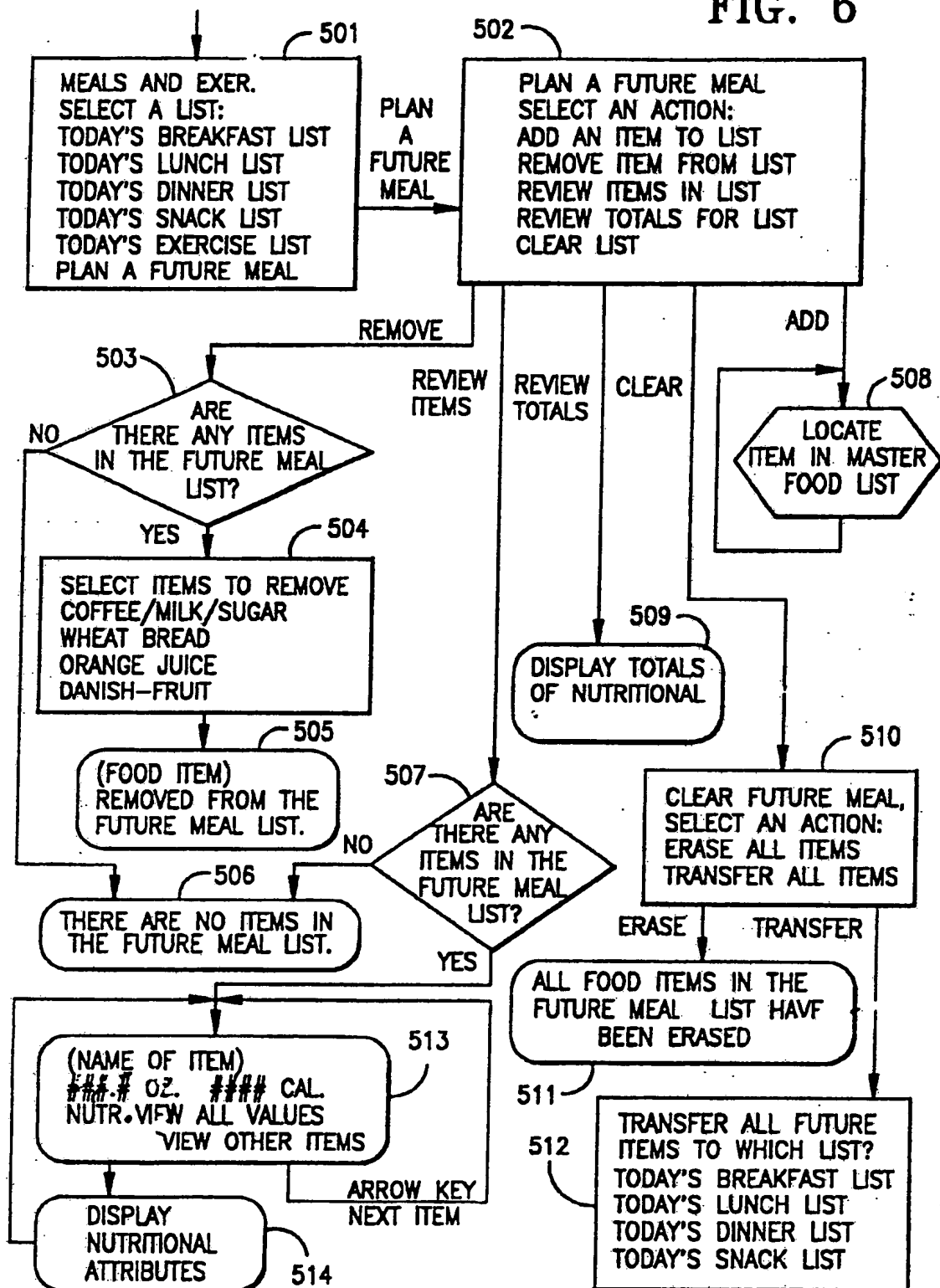


FIG. 5



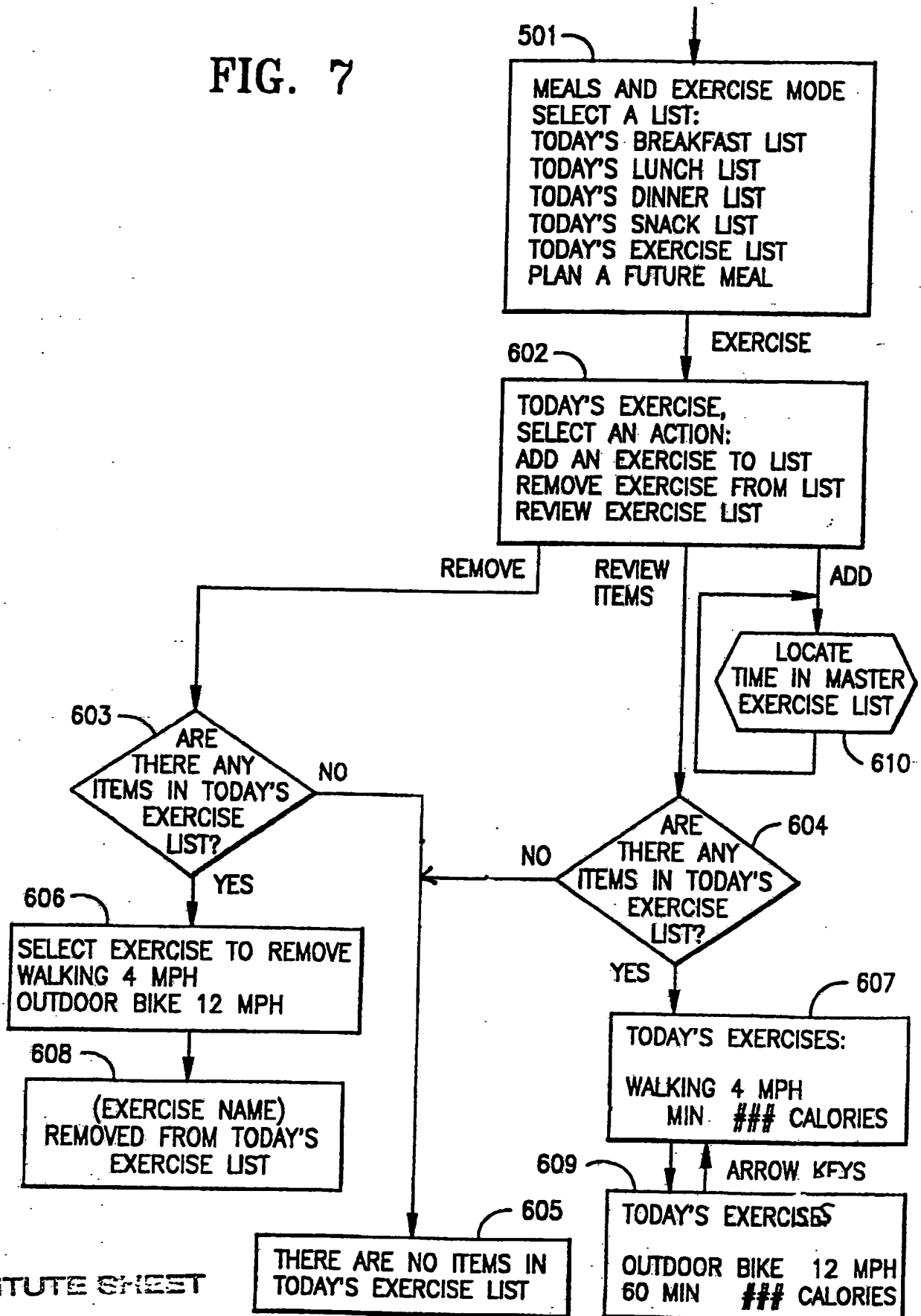
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FIG. 6



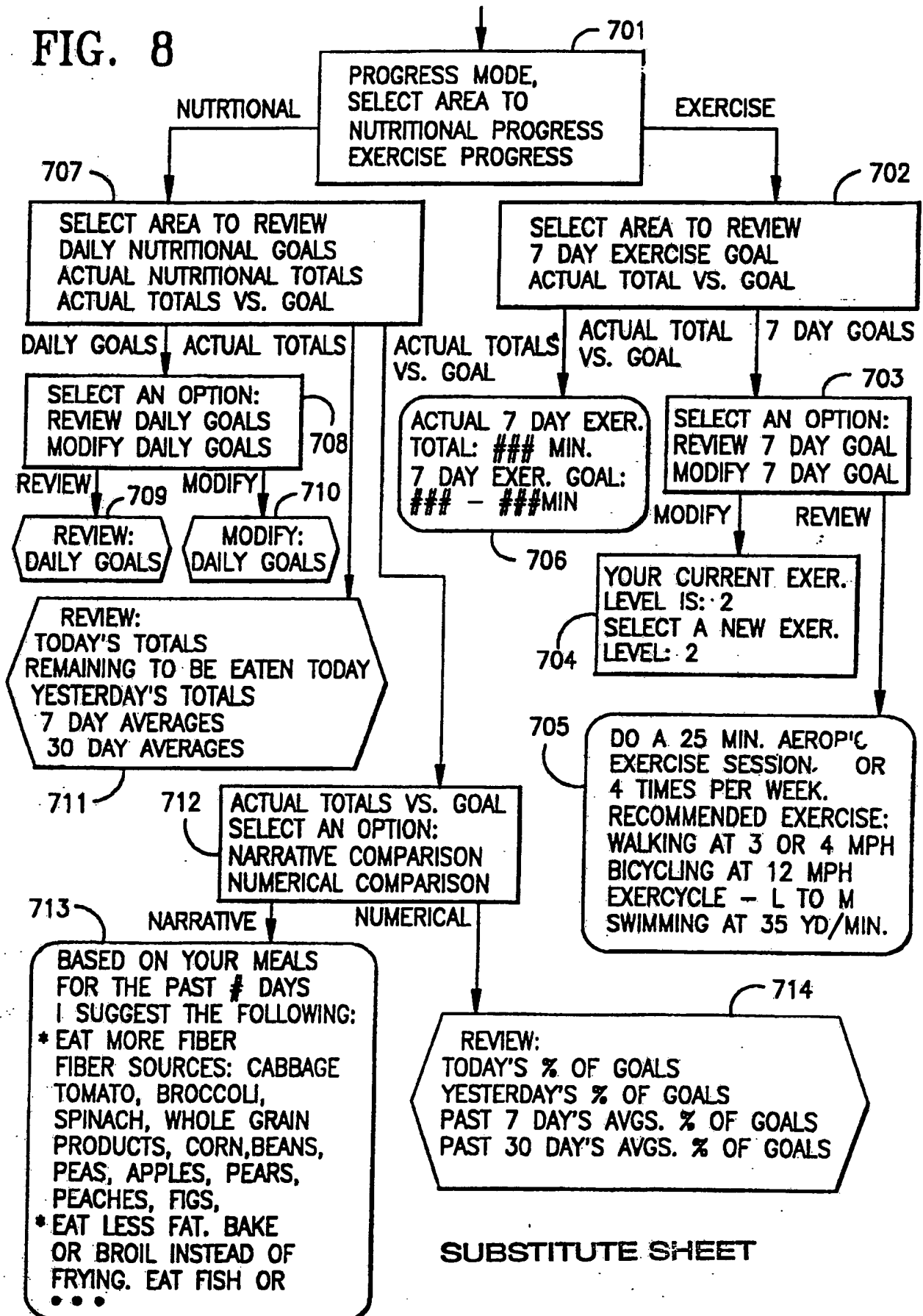
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FIG. 7



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FIG. 8



## INTERNATIONAL SEARCH REPORT

International Application No.  
PCT/US92/08443

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(5) : G06F 15/00

US CL : 364/413.01

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 364/413.01

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Software Toolworks (The), "Mydiet"; 01 January 1985; 19808 Nordhoff Pl.; Chatsworth, CA 91311, USA	1-16
Y	N-Square Computing, "Nutritionist II" 01 January 1983; 5318 Forest Ridge Rd.; Silverton, or. 97381 USA	1-16
Y	JP, A, 60-142772 (ISHIBASHI); 27 July 1985 (See English Abstract)	1-16
Y	JP, A, 62-257567 (TAKAKURA) 10 November 1987	1-16
Y	JP, A, 59-188771 (OGUMA(I)) 26 October 1984, (See English Abstract).	1-16
Y	JP, A, 62-293373 (YOSHINAGA) 19 December 1987, (See English Abstract).	1-16

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

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* P* document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

12 NOVEMBER 1992

Date of mailing of the international search report

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